

A SEMANTIC METHOD FOR GRIDDING OF AIRBORNE LIDAR DATA

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ABSTRACT :

Airborne LIDAR has emerged recently as an important technology for the rapid extraction of 3D spatial information. Raw point cloud is the initial product of airborne LIDAR and it always must be gridded into raster DSM for the convenience of processing and applications. There are certain constraints on objects in GIS which have direct relations to height. These relations demonstrate the implicit semantic information and errors occur if they are ignored during processing, for example, the lake's height is not constant. This paper researches on a semantic method for gridding of airborne LIDAR data by constraints induced from implicit semantic information especially for still water areas' height interpolation: still water area such as lake and pool has constant height and their height is lower than the surrounding bank. The semantic method's concept can be extended and other constraints can be constructed for the gridding of other kind of object's airborne LIDAR point cloud if there are prior GIS knowledge and data for them. Airborne LIDAR works by sending a pulse to the earth surface and receiving the returned signal, thereby determining the 3D coordinates of the measured ground point. But for water, the pulse is always absorbed, thus there are data voids in the raw point cloud where there are water areas. Based on the above fact, an automatic approach to detect water area from airborne LIDAR data is proposed. Some experiments are taken and the results demonstrate its efficiency.